In the Claims:

1. (Currently Amended) A method of generating a filter for a nuclear medicine imaging system, the filter for selecting valid detected radiation events for image processing, the method comprising:

providing a dataset indicative of a plurality of emitted radiation events occurring over a predetermined period of time;

generating signals representative of the response of a detector to the dataset of the plurality of emitted radiation events;

determining a correlation pattern based on a correlation of a plurality of signals resulting from the response of the detector for each of a plurality of single radiation events in the dataset; and

generating a filter based on the correlation pattern.

2. (Original) The method of claim 1 including storing the generated filter as a histogram.

3. (Original) The method of claim 2 wherein the histogram is three dimensional.

4. (Original) The method of claim 1 wherein the correlation pattern is determined from signals based on at least one photomultiplier tube sub-set near a peak photomultiplier tube.

5. (Original) The method of claim 4 wherein the at least one sub-set is an ordered triple.

6. (Original) The method of claim 4 wherein each of the individual signals of the sub-set correspond to a dimension in a histogram representative of the correlation pattern filter.

7. (Original) The method of claim 5 wherein the at least one subset is selected based on spatial relationship and each element in the at least one subset corresponds to a dimension in the filter.

8. (Original) The method of claim 4 wherein the signals representative of the at least one photomultiplier sub-set are normalized to the peak photomultiplier tube signal.

9. (Original) The method of claim 1 wherein the data set is obtained by at least one of empirical acquisition, analytical generation and simulation.

10. (Original) The method of claim 1 wherein determining a pattern includes indexing the response of the detector to a single radiation event.

11. (Original) The method of claim 10 wherein generating the filter includes comparing the number of occurrences of the indexed response of the detector to single radiation events to a threshold value.

12. (Original) The method of claim 11 wherein the threshold value is a predetermined number of occurrences of the indexed response over a predetermined period of time.

13. (Currently Amended) A method of filtering valid events from invalid events from a plurality of detected events, the method comprising:

acquiring a data stream of a plurality of detected events with a detector wherein a plurality of related signals is indicative of a single detected event;

applying a correlation filter to the data stream of a plurality of detected events to determine whether the detected events are valid, the correlation filter generating a pattern based on a correlation of a plurality of signals resulting from a response of an associated detector to a plurality of single radiation events in an ideal dataset; and

processing the valid events.

14. (Original) The method of claim 13 including determining the location of the detected event after applying the correlation filter to the detected events.

15. (Currently Amended) The method of claim 13 wherein the correlation filter ~~is~~ includes a histogram.

16. (Original) The method of claim 15 wherein the histogram is three dimensional.

17. (Original) The method of claim 13 wherein the correlation filter is determined from signals based on at least one photomultiplier tube sub-set near a peak photomultiplier tube.

18. (Original) The method of claim 17 wherein the at least one sub-set is an ordered triple.

19. (Original) The method of claim 17 wherein each of the PMT signals of the acquired data stream of detected events of the sub-set correspond to a dimension in a histogram representative of the correlation filter.

20. (Original) The method of claim 19 wherein the at least one sub-set is selected based on spatial relationship.

21. (Currently Amended) An apparatus for filtering valid detected nuclear events from invalid events from a plurality of detected events, the apparatus comprising:

a detector for acquiring a data stream of a plurality of detected events wherein a plurality of related signals is indicative of a single detected event;

a processor for applying a correlation filter to the data stream of a plurality of detected events to determine whether the detected events are valid, the correlation filter generating a pattern based on a correlation of a plurality of signals resulting from a response of an associated detector to a plurality of single radiation events in an ideal dataset; and

a processor for processing the valid events into images.

22. (Original) The apparatus of claim 21 including means for determining the location of the detected event after applying the correlation filter to the detected events.

23. (Currently Amended) The apparatus of claim 21 wherein the correlation filter ~~is~~ includes a histogram.

24. (Original) The apparatus of claim 23 wherein the histogram is three dimensional.

25. (Original) The apparatus of claim 13 wherein the correlation filter is applied to a plurality of signals from at least one photomultiplier tube sub-set near a peak photomultiplier tube.

26. (Original) The apparatus of claim 25 including means for arranging the at least one sub-set of signals in an ordered triple.

27. (Original) The apparatus of claim 25 including means to arrange each of the individual photomultiplier tube values of the at least one photomultiplier tube sub-set of the acquired data stream of detected events to correspond to an associated dimension in a histogram applied as the correlation filter.